

Data Table		
Length of Mg Used		cm
Mass per meter of Mg		g/m
Volume of H ₂ Collected		mL
Atmospheric Pressure		mm Hg
Temperature of Gas		°C

Calculations (show all of your work with units)

1. Use the mass of one meter of magnesium ribbon and your length of Mg to find the mass of Mg used.

2. From the mass of Mg in the above problem use the molar mass of Mg (24 g/mol) and calculate how many moles of Mg you used.

3. Write the balanced equation of the reaction below. What is the molar ratio between Mg and H₂?

4. Use the number of moles of Mg from question 2 and the molar ratio from question 3 to calculate the number of moles of H₂ produced.

5. Use Boyle's Law ($V_1P_1 = V_2P_2$) to adjust the volume of the gas collected from the pressure in the room to standard pressure.

6. Take your volume from 5 and adjust it from room temperature to standard temperature using Charles' Law ($V_1T_2=V_2T_1$).
7. Convert the volume of gas at STP produced from mL to L.
8. Use the volume of the hydrogen at STP and divide it by how many moles of H_2 produced to find the molar volume of a gas at STP.
9. Calculate the experimental error for the experiment using the formula below.

$$\% \text{ error} = \frac{|\text{observed value}-\text{actual value}|}{\text{actual value}} \times 100\%$$

Questions

1. Is your molar volume amount higher or lower than the actual value? Give some sources of error in this lab.
2. From the reaction, how many L of H_2 gas could be produced at STP if 2.5 moles of Mg reacted?
3. Since the 1930's aluminum/magnesium alloys have been used to make pots and pans for cooking. What are some examples of foods that could react with these pans?

Answer questions 20-23 on page 274 in the book on a separate sheet of paper and attach it to this lab.